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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,015	06/27/2003	Jozef Szlufcik	IMEC306.001AUS	8356
20995	7590	01/06/2006	EXAMINER	
KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614			VINH, LAN	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 01/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/609,015

Applicant(s)

SZLUFCH ET AL.

Examiner

Lan Vinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/25/2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-15 and 25-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-15 and 25-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/14/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 8-13, 25-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klein et al (US 2003/0160026 A1) in view of Williams (US 6,594,542) and further in view of Skorupshi et al (US 2002/016221A1)

Klein discloses a method of etching a semiconductor substrate, the method comprising the steps of:

applying an etching paste comprising an etchant to a silicon dioxide layer/a part of the substrate (col 2, paragraph 0034; col 3, paragraph 0055), the substrate can be silicon wafer (col 2, paragraph 0034), the etchant contains ammonium (col 3, paragraph 0055)

heating the substrate, such that the part or the layer of the substrate upon which the etching paste has been applied is etched (col 3, paragraph 0055)

Unlike the instant claimed inventions as per claims 1, 25-27, Klein fails to specifically disclose that the semiconductor substrate is a microcrystalline silicon substrate

Williams, in a method for controlling the depth of material during CMP, discloses that silicon wafer comprises of monocrystalline silicon substrate/microcrystalline silicon substrate (col 1, lines 41-43)

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One skilled in the art at the time the invention was made would have found it obvious to employ monocrystalline silicon/microcrystalline silicon as silicon substrate in Klein method in view of Williams teaching because Williams discloses that the wafer substrates typically comprises of a monocrystalline semiconductor (col 1, lines 41-42)

Klein also fails to specifically disclose that the etchant comprises ammonium hydroxide, potassium hydroxide and sodium hydroxide as required in claims 1, 25-27

Skorupski discloses a method of manufacturing printed circuit comprises the step of using an aqueous etchant alkaline solution comprises ammonium hydroxide, potassium hydroxide and sodium hydroxide (col 2, paragraph 0022)

Since Klein disclose that the etchant contains ammonium, one skilled in the art at the time the invention was made would have found it obvious to modify Klein by using an aqueous etchant alkaline solution comprises ammonium hydroxide, potassium hydroxide and sodium hydroxide as per Skorupski because Skorupski discloses that preferred etchants are aqueous alkaline solution includes hydroxide which include potassium hydroxide, sodium hydroxide and ammonium hydroxide (col 2, paragraph 0022)

Regarding claims 2-4, Klein discloses the etching paste includes additive such as ammonium (col 3, paragraph 005), which reads on the etching paste is basic, caustic or alkaline

Regarding claims 5-6. Klein discloses the etching paste includes solvent, thickener (col 3, paragraph 0056), which reads on the etching paste comprises a natural etching paste/natural synthetic paste

Regarding claim 8, Klein discloses selectively etching the structure using the etching paste (col 4, paragraph 0093)

Regarding claims 9-10, Klein discloses that screen-printing is a suitable technique for applying the etching paste (col 4, paragraph 0100)

Regarding claim 11, Klein discloses applying the etching paste to a doped layer (col 5, paragraph 0140)

Regarding claim 12, Klein discloses applying the etching paste to a substrate comprises a solar cell and an emitter region (col 5, paragraph 0105)

Regarding claim 13, Klein discloses using the etching paste to obtain edge sharpness of the etch structure (col 3, paragraph 0047)

Regarding claims 28-33, Klein discloses that the etching paste comprises a solvent such as water (col 3, paragraph 0059) and a thickener such as carboxymethylhydroxyethyl cellulose, starch derivative (col 4, paragraph 0071, 0072)

5. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klein et al (US 2003/0160026 A1) in view of Williams (US 6,594,542) and Skorupshi et al (US 2002/016221A1) and further in view of Moon et al (US 6,524,880)

Klein as modified by Williams and Skorupski has been described above. Unlike the instant claimed inventions as per claims 14-15, Klein, Williams and Skorupski fail to specifically disclose forming one metal contact on a base and emitter region of the substrate and heating the substrate to yield an insulating layer to isolate the metal

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contact although Klein discloses applying the etching base to a substrate and an emitter or a solar cell

Moon discloses a method for fabricating a solar cell comprises the step of forming one metal contact on a base and emitter region of the substrate and heating the substrate to yield an insulating layer (col 3, lines 5-45)

Since both Klein and Moon are concerned with method for forming solar cell one skilled in the art at the time the invention was made would have found it obvious that Klein, Williams and Skorupski solar cell would have included a metal contact on a base and emitter region of the substrate in view of Moon teaching because Moon discloses that high-efficient solar cell includes selective emitter layer under the front metal contact (col 2, lines 34-37)

Response to Arguments

6. Applicant's arguments with respect to rejection(s) of claims 1-11 based on Klein et al (US 2003/0160026) have been considered but are moot in view of the new ground(s) of rejection.

The applicants argue that Klein only discloses etching of a glass, i.e., a silicon oxide- or silicon nitride-based material. Klein et al. does not disclose etching a substrate that is not in an oxide or nitride form, such as a microcrystalline silicon substrate, a polycrystalline silicon substrate, an amorphous silicon substrate, a doped silicon substrate, a gallium arsenide substrate, a gallium arsenide phosphide substrate, a germanium substrate, or a silicon germanium substrate. However, since Klein discloses

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applying an etching paste comprising an etchant to a silicon dioxide layer/a part of the substrate, as required in claim 1, and the substrate can be silicon wafer, one skilled in the art at the time the invention was made would have found it obvious to employ microcrystalline silicon substrate as the substrate as discussed in paragraph 2 above

Moreover, Klein et al. only discloses fluoride containing etchants. Klein et al. does not disclose use of an etchant such as potassium hydroxide, sodium hydroxide, or ammonium hydroxide. However, since Klein discloses that the etchant contains ammonium, one skilled in the art at the time the invention was made would have found it obvious to employ of an etchant such as ammonium hydroxide in Klein method as discussed above in paragraph 2

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



LV

January 2, 2006